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IN THE

Supreme Court of the United States

OCTOBER TERM, 1978

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION and DEPARTMENT OF TRANSPORTATION,
Petitioners,

v.

PACCAR INC, *et al.*
Respondents.

BRIEF OF RESPONDENTS PACCAR INC. AND AMERICAN TRUCKING ASSOCIATIONS, INC. IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI

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STATEMENT OF THE CASE—OPINION BELOW

Respondent PACCAR Inc (PACCAR) manufactures custom-built diesel powered airbrake trucks under the names Kenworth and Peterbilt. Federal Motor Vehicle Safety Standard No. 121 (the Standard) establishes air brake system requirements. PACCAR petitioned for judicial review directly with the United States Court of Appeals for the Ninth Circuit, pursuant to 15 U.S.C. §1394 (a)(1). American Trucking Associations, Inc. (ATA), the national organization of the trucking industry, and Truck Equipment & Body Distributors Association (TEBDA), the national organization for "Final Stage" manufacturers, filed similar petitions. The three petitions were consolidated for review.

The heart of the opinion is a holding that one limited

portion of the Standard does not meet the Safety Act requirement of reasonableness and practicability. 15 U.S.C. §§1391(2), (1392(a) and 1392(f)(3). In order to meet this portion of the Standard manufacturers found it necessary to use antilock devices to control wheel lockup during braking. Antilock consists of a minicomputer attached to each axle of the vehicle which "senses" when a wheel begins to lock and momentarily releases the brake to regain traction. When the antilock fails, serious safety problems result, including lateral instability, jackknifing, wheel lockup and pulling to one side. (App. A of Petition, pp. 9a; 14a, n. 26; and 19a-25a.) The court discussed in detail the underlying record and found that "critical problems" with antilock "began with mass production of vehicles designed to meet the Standard." (App. A, 19a.) The court concluded:

> Yet, despite massive evidence presented to NHTSA that many vehicles equipped with antilocks were potentially more dangerous in performance than pre-Standard vehicles, the agency admitted during oral argument in July, 1976, that it had done no compliance testing since the Standard went into effect over a year earlier. Agency attorneys also admitted that prior to the effective date of the Standard, NHTSA had done no reliability testing of vehicles with Standard-121 components whatsoever, other than the testing reviewed in the Murphy Report, which did not include stops at the higher speeds.

(App. A, p. 24a.)

> . . . the comprehensive data before us indicate that there is a strong probability that the performance of a substantial number of vehicles whose braking systems have been altered to include "overpowered" front axles and antilock devices has created a potentially more hazardous highway situation than existed before the Standard became operative. Therefore, until such time as NHTSA develops evidence that the new braking systems required by the Standard do not create the possibility of greater danger to the public, those parts of the Standard requiring heavier axles and the antilock device should be suspended. The evidence indicates that this can be accomplished if we hold, as we do, that the stopping distance requirements from 60 mph are invalid.

(App. A, p. 26a.)

The court also found that certain test procedures did not meet the Safety Act practicability requirement. (App. A, pp. 26a-31a.) Petitioners apparently do not challenge this portion of the opinion since there is no reference to test procedures in the "Questions Presented" section of the Petition and on p. 13, note 8 petitioners affirm that this issue is not being presented to this Court.

1. Summary of Argument—The Petition Does Not Meet the Considerations Governing Review Contained in Supreme Court Rule 19

No federal question of substance is presented by the Petition. The court's decision is not in conflict with any other court of appeals decision. No important question of federal law has been decided. And petitioners do not assert that the court departed from the accepted and usual course of judicial proceedings.

The Petition involves a fact review. The court of appeals reviewed the underlying record in depth and concluded that NHTSA failed to fulfill certain Safety Act requirements. Petitioners seek to have this Court re-review this record. (Section 2, below.)

Petitioners imply the entire Standard has been invalidated, in an effort to make this an "exceptional" case and to make it appear that increased highway accidents will result from such invalidation. This is untrue. Only a small portion of the Standard was invalidated. The reason, in

part, was that the Standard created a more dangerous highway situation than existed prior to its adoption. (Section 3, below.)

The Petition contains numerous distortions of the court of appeals' opinion in an apparent attempt to create legal issues. (Section 4, below.)

The underlying record fully supports the court of appeals' determinations. Four Brief appendices are attached giving a sampling of the extensive record reviewed by the court which documents the myriad problems experienced in attempting to meet the Standard. (Section 5, below.)

2. The Review Sought is Limited to Determinations of Fact. No Substantial Legal Issues are Presented

The first "question presented" by petitioners is whether NHTSA "acted arbitrarily or capriciously in determining that its performance standard for air-braked trucks was 'practicable'." (Pet., p. 2.) Nowhere in the court of appeals' opinion, however, is there a holding that NHTSA was "arbitrary and capricious." Instead the court found that a portion of the Standard did not meet the Safety Act requirements of "reasonableness" and "practicability". (App. A, p. 18a.) 15 U.S.C. §§ 1391(2), 1392(a), and 1392(f)(3). As discussed below at pp. 6 and 7, determining whether a standard meets the Safety Act requirements is one of the functions of a reviewing court.

The second "question presented" is whether "NHTSA must conduct independent tests to assure the reliability of equipment designed" to meet the Standard. (Pet., p. 2.) This statement omits an essential ingredient of the decision, the finding of "substantial evidence received by NHTSA that the 'in-use' performance of vehicles equipped

with antilock was not consistent with the performance required by the Standard and in some circumstances may have been more hazardous than the performance of pre-Standard vehicles." In this situation

> the agency's failure to conduct more intensive testing of trucks and tractor-trailers certified under the Standard was not only unreasonable, but, also, a legal abuse of its discretion.

(App. A, p. 25a.)

The two questions presented involve a factual issue, whether the underlying record supports the court of appeals' conclusion that the Safety Act requirements had not been met.

The Safety Act prescribes the criteria for safety standards, and requires the agency to consider certain factors and to conduct research, testing and development.

A safety standard must:

Be practicable	—15 U.S.C. §§ 1391(2), 1392(a) and (f)(3) (see Note 1 below)
Meet the need for motor vehicle safety	—15 U.S.C. 1391(1) and (2), 1392(a)
Be reasonable	—15 U.S.C. 1392(f)(3)

In prescribing a safety standard NHTSA is required to:

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1. 15 U.S.C. §1391 was omitted from the rendition of the Safety Act in Appendix C to the Petition. The relevant subsections provide:

> (1) "Motor vehicle safety" means the performance of motor vehicles or motor vehicle equipment in such a manner that the public is protected against unreasonable risk of accidents occurring as a result of the design, construction or performance of motor vehicles and is also protected against unreasonable risk of death or injury to persons in the event accidents do occur, and includes nonoperational safety of such vehicles.
>
> (2) "Motor vehicle safety standards" means a minimum standard for motor vehicle performance, or motor vehicle equipment performance, which is practicable, which meets the need for motor vehicle safety and which provides objective criteria.

Consider relevant motor vehicle safety data including the results of its own research, development, testing and evaluation activities	—15 U.S.C. 1392(f)(1)
Consider whether a proposed standard is reasonable, and practicable	—15 U.S.C. 1392(f)(3)
Conduct research, testing, and development	—15 U.S.C. 1395(a)
Procure experimental and other vehicles and equipment for research and testing	—15 U.S.C. 1395(a)(2)

These requirements are the "statutory minimum substantive criteria against which each automotive safety standard must be tested." *Chrysler v. Dept. of Transportation,* 472 F.2d 659 (6th Cir. 1972) at 668. In addition the Secretary (NHTSA) must "file in the court the record of the proceedings on which the Secretary based his order," 15 U.S.C. § 1394(a), which record must include "all the evidence before the agency," 28 U.S.C. § 2112. The court of appeals must then " 'engage in a substantial inquiry' and a 'thorough, probing in-depth review' " of this record. *Chrysler v. Dept. of Transportation, supra* at 668 and 669, citing *Citizens to Preserve Overton Park v. Volpe,* 401 U.S. 402 at 415, 91 S. Ct. 814, 28 L. Ed. 2d 136 (1971). In *Overton Park* this Court held that when Department of Transportation action is subject to review under the Administrative Procedure Act, 5 U.S.C. § 706 (safety standards are reviewable in this fashion, *see* 15 U.S.C. § 1394(a)(3)), the court must review the underlying record in the manner cited by the court in the *Chrysler* case. The court must decide whether the Secretary "acted within the scope of his authority," whether his action was

"arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" and must consider whether the Secretary's decision "was based on a consideration of the relevant factors and whether there has been a clear error of judgment." *Overton Park, supra,* 401 U.S. 402 at 415 and 416.

Petitioners accept the review criteria in *Citizens to Preserve Overton Park v. Volpe,* citing the case on pp. 15 and 20 of the Petition, and so did the court of appeals, discussing the case at p. 6a of the opinion. (App. A, p. 6a.) The court of appeals did conduct a "thorough, probing in-depth review" of the record and concluded that certain limited portions of the Standard do not meet the Safety Act requirements. Appendix E to this brief consists of quotations from the documents in the record cited by the court, arranged by opinion page and citation number. (This first appendix to this brief is given the designation E to avoid confusion with Petitioner's appendices.) These quotations, which portray the litany of problems plaguing the Standard, fully support the court of appeals' conclusions. It is these factual conclusions about which Petitioners complain, and thus the considerations of Supreme Court Rule 19 have not been met.

3. Petitioners Attempt to Create an Exceptional Case by Implying the Entire Standard has been Invalidated and that Highway Accidents Will Result. These Implications are Untrue

Petitioners repeatedly imply that the entire Standard has been invalidated. It appears their aim is to make this an "exceptional" case (Pet., p. 14), and to raise the spectre of increased highway injuries and deaths if the court of appeals' decision is not overturned. These assertions are

not true. Only a part of the Standard was found invalid. With regard to increased highway hazards the court of appeals found directly to the contrary. It concluded that those parts of the Standard requiring overpowered front axles and antilock devices created "a potentially more hazardous highway situation than existed before the Standard became operative." (App. A, p. 26a; and *see* the full quotations on pp. 2 and 3 of this brief.) The underlying record fully supports this conclusion.

At p. 12 Petitioners state:

> In light of its conclusion about the antilock devices, the court held that the 293-foot braking-distance limitation in the Standard is not "practicable" (see 15 U.S.C. 1392(a)), and therefore concluded that *the Standard is invalid.*

(Emphasis supplied.)

At p. 14 they assert:

> This case, . . . is exceptional. The Standard at issue here is an especially important part of NHTSA's attempt to reduce highway fatalities, and *its invalidation* could lead to deaths and injuries that should be prevented. It is impossible to predict the number of additional accidents that will be caused by the *invalidation of the Standard.*

(Emphasis supplied.)

On p. 21 they pronounce:

> It was error for the court to hold that, because some noncomplying vehicles have been made, *the agency may not enforce the Standard* that was designed to bring about compliance.

(Emphasis supplied.)

Contrary to the above statements, the only portions of the Standard held invalid are one stopping distance requirement, and certain road testing procedures. With regard to the former the court stated:

> [U]ntil such time as NHTSA develops evidence that the new braking systems required by the Standard do not create the possibility of greater danger to the public, those parts of the Standard requiring heavier axles and the antilock device should be suspended. The evidence indicates that this can be accomplished if we hold, as we do, that the stopping distance requirements from 60 mph are invalid.

(App. A, p. 26a.) With regard to road test procedures, the court found invalid the "skid number" method of measuring road surface slickness, and the failure to specify time intervals between tests, duration of permissible wheel lockup during tests, and the amount of curving in test roadways. (App. A, pp. 28a-29a.) The court also invalidated road test requirements for TEBDA members because NHTSA admitted that such testing was beyond their practical and financial capabilities. (App. A, p. 32a.)

The major portion of the Standard is unaffected by the court's decision. The provisions remaining fully in force include: *Required Equipment* (Sections S5.1 and S5.2 of the Standard, App. D, to the Pet., pp. 46a-49a); *Service Brakes Road Tests,* except for stops from 60 mph (Section S5.3, App. D, pp. 49a-54a); *Dynamometer Tests,* (Section S5.4, App. D, pp. 54a-56a); *Parking Brake Systems* (Section S5.6, App. D, pp. 58a-59a); and *Emergency Braking Capability* (Section S5.7, App. D, pp. 60a-64a).

4. Petitioners have Distorted the Court of Appeals Opinion in an Attempt to Create Legal Issues

Throughout this Petition are numerous distortions or misstatements of the court of appeals' opinion. Petitioners' aim apparently is to restructure the opinion so that it contains legal issues which should be reviewed by this Court. No substantial legal issues are presented, however,

and the only question is whether the underlying record supports the court of appeals' determinations of fact.

The first distortion, that the court found that NHTSA acted arbitrarily or capriciously, was discussed above at p. 4. A second distortion or misstatement, that the court invalidated the entire Standard, is discussed in Section 3, above.

On p. 11 petitioners state: "[t]he court acknowledged that, before it promulgated the Standard, NHTSA had confirmed the reliability of antilock devices." There is no such acknowledgment. The court only referred to NHTSA's assertion to that effect in the Federal Register. (App. A, p. 10a.) Again on page 11 petitioners assert the court acknowledged that antilock devices "had been used *successfully* on airplanes and cars." (Emphasis supplied.) The court's statement was that "antilock devices had been used on *some* cars and aircraft." (Emphasis supplied.) (App. A, p. 19a.)

On pp. 11 and 12 the petitioners assert that "the court acknowledged that 'the absolute number of vehicles . . . (evidencing antilock problems) is quite small.'" There was no such acknowledgment. The court was discussing three spot checks of antilock equipped vehicles which showed failure rates of 48%, 59%, and 65%. The court stated that "the absolute number of vehicles represented by these figures is quite small." (App. A, p. 22a.)

At pp. 15 and 16 petitioners assert the court ruled against NHTSA "because problems had arisen in antilock devices made by certain firms." Nowhere does the court state that antilock problems were limited to only certain firms. It is clear from the court's opinion and from the

record presented to the court that antilock problems were experienced by all manufacturers.

On p. 17, petitioners state: "[t]ests performed by NHTSA in 1975 on three antilock-equipped trucks also revealed that the heavy-truck industry possesses the necessary technology to meet the Standard" citing p. 25a of the court's opinion. A similar assertion is made at p. 22, note 18, again citing the opinion. The court made no such statement. The court did refer to tests of three vehicles as part of the "proof" of reliability on which NHTSA was relying, but could not discuss the test results because NHTSA had not yet published them. The tests were completed in July, 1975 and the test report was to be issued "in the near future." (NHTSA July. 1975 progress report, Doc. No. 75-16-No2-125.) At the time the case was submitted to the court in July, 1976, NHTSA's latest published progress report of April, 1976 stated that "preparation of the final report is continuing." (Doc. No. 75-16-No2-184.)

5. The Underlying Record Supports the Court of Appeals' Factual Determinations

As discussed above, the key issue is whether the record supports the court of appeals' determinations. In attacking these determinations, petitioners, except for one reference to a 1969 research contract (Pet., p. 4, n. 2), refer only to their own pronouncements in the Federal Register. Forty-four Federal Register notices were published concerning the Standard prior to the case being submitted to the court of appeals. Not one cites or identifies the tests or documentary materials supposedly supporting NHTSA's findings and pronouncements in the notices.

In contrast is the mass of material in the record sup-

porting the court's conclusions. Appendix E to this brief consists of 18 pages of quotations from the documents cited by the court in support of its findings.

Appendix F consists of summaries of testimony presented at a three day hearing held by NHTSA in October 1975, nine months after the Standard was in full effect, to explore the many problems being reported to NHTSA. (*See* court of appeals reference to the hearing, App. A, p. 13.) The transcript of the hearing testimony is Doc. No. 75-16-No2-042, totalling 561 pages. The summaries of testimony contained in Appendix F were presented to the court in the form of brief appendices. By letter dated March 31, 1976, counsel for PACCAR and the petitioners agreed that such summaries would be part of the administrative record and this was accomplished by NHTSA Doc. No. 75-16-No7-017 of April 26, 1976. Those summaries were numbered and titled as follows:

BA-30 — Testimony Concerning Antilock Dangers

BA-33 — Summary of Testimony Concerning Antilock Problems — By Antilock Manufacturer

BA-35 — Testimony Concerning SS-121 — The Truck Experience

BA-36 — Summary of Documents and Testimony, Radio Frequency Interference.

NHTSA keeps a separate complaint file which it describes as a "reliability file". A summary of the documents in that file also was made part of the record, pursuant to the agreement of counsel described in the foregoing paragraph. That summary has been reproduced as Attachment G to this brief.

In note 11 on p. 17, petitioners assert that three manufacturers of antilock equipment had not reported a single safety-related defect, and that this establishes that anti-

lock devices can be successfully made. There are seven manufacturers of antilock devices. All seven antilock manufacturers have experienced multiple problems as shown by document BA-33 in Appendix F to this brief.

At p. 16, note 9, petitioners assert: "the fact that *some* manufacturers *claim* to have experienced difficulties with antilock equipment cannot by itself mean that the standard is impractical." (Emphasis supplied.) The materials already referenced make it clear that the problems were not confined to "some" manufacturers. Further, the evidence was more than just claims of manufacturers. Appendix H to this brief is a complete reproduction of NHTSA Doc. No. 75-16-No2-042-P-8, the findings of the California Highway Patrol's commercial vehicle section. It lists 24 accidents and "extensive documented operational deficiencies that have occurred across the spectrum of vehicles placed into service under 121 requirements." (App. H, pp. 4 and 10.)

Petitioners argue that NHTSA has no duty to conduct research or testing, has no duty to consider the results of research or testing, and that the court erred in holding to the contrary. (Pet., pp. 14, 17 and 19-22.) The Safety Act, however, provides:

> The Secretary *shall* conduct research, testing, development, and training necessary to carry out the purposes of this subchapter, including, but not limited to—
>
> (2) procuring (by negotiation or otherwise) experimental and other motor vehicles or motor vehicle equipment for research and testing purposes;

15 U.S.C. § 1395(a) (emphasis supplied).

> In prescribing standards under this section, the Secretary *shall*—
>
> (1) consider relevant available motor vehicle

> safety data, including the results of research, development, testing and evaluation activities conducted pursuant to this chapter;

15 U.S.C. 1392(f) (emphasis supplied).

In an agreed "Order Settling the Record and the Issues" prepared by counsel for all parties and entered by the court of appeals on April 29, 1976, NHTSA made the following admissions:

> 11. Except for testing described in the Murphy Report, NHTSA did not conduct any reliability testing of vehicles with SS-121 components prior to the effective dates of SS-121.
>
> 33. NHTSA has not yet begun testing of vehicles for compliance with SS-121.

The "Murphy Report" just referred to, NHTSA Doc. DOT HS-800 492, concerns tests conducted in 1969 and 1970. Vehicles with "advanced" systems including more effective brakes and antilock exhibited stability problems even at moderate deceleration levels and the report warned against instituting an inclusive standard until antilock with a high degree of reliability was available. (Murphy Report, Vol. 1, pp. 60, 164, 167, and 248-250.) Four years later, at NHTSA's October 1975 hearing, Mr. Murphy, the principal author testified:

> The Administration had adequate warning of the problems we are currently experiencing in the field with systems mandated by FMVSS-121. In the final report of the DOT sponsored study, the problems with overly effective brakes and antilock system reliability were clearly delineated. . . . The problems associated with over-effective brakes and unreliable antilock systems have been brought to the attention of the Administration time and time again over the past five years.

(Doc. No. 75-16-No2-042 at TR 296-298.)

CONCLUSION

The essence of the Petition is that the court of appeals did not accept at face value petitioners' self-serving, unsupported Federal Register pronouncements concerning the Standard, but instead conducted "a careful review of the extensive record," (App. A. p. 18a) as required by *Overton Park*. Petitioners would have this Court re-review this record. It is respectfully submitted that this is not the function of this Court.

It is important to note that the court of appeals specifically confirmed NHTSA's authority to promulgate new stopping distance requirements to replace the invalidated 60 mph requirement. (App. A, p. 26a.) Unfortunately, all rulemaking pertaining to the Standard has been suspended while NHTSA pursues its remedy in this Court. Granting the Petition will further delay any rectification of the Standard, and overturning the court of appeals will perpetuate the highway hazard found by that court. The Petition should be denied.

Respectfully submitted,

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APPENDIX E
COURT OF APPEALS CITATIONS TO THE RECORD

The following quotations are taken from the citations to the record by the court of appeals in its April 17, 1978 opinion. The page references for that opinion are those used in Appendix A of the Petition for Writ of Certiorari.

Page 10a, n. 20 "Complaints" received by NHTSA "that antilock devices were unreliable, and rendered vehicles dangerously unsafe when combined with new, more effective brakes."

— "[W]e believe that a most serious safety problem may be created by present state-of-the-art brake systems designed to meet MVSS-121. This is due to the possibility of complete loss of vehicle control resulting from a failure of the wheel lock control system." Letter from General Motors Corp., *supra* note 16; Nov. 28, 1973 (Doc. No. 70-17-No4-001)

— "The kinds of problems Ford has uncovered by testing and engineering evaluation in the past year are both complex and fundamental. The brake torques needed to satisfy the 245 ft. stopping distance prescribed by the Standard generate a huge weight transfer from rear to front on heavy duty vehicles. The loads on the front spring suspension which result from the weight transfer and the high front brake torques introduce new design problems for which we have found no solutions. The effect of these new problems on many vehicles is to cause extreme vehicle instability during high decelerations.

The rates of deceleration needed to comply with the stopping distances prescribed in FMVSS 121 have stretched the overall braking capability of these large vehicles to the limits imposed by the physical parameters that govern a vehicle's ability to stop. Certain vehicles cannot comply with the prescribed stopping distances.

The problems of handling and stopping distance are further complicated by the present lack of reliability for antilock systems. Malfunction in this system can render a vehicle unstable during fast deceleration because the high torque brakes can and will lock the wheels. As de-

tailed in Attachment IV, one Ford test vehicle recently rolled over due to a rear axle antilock malfunction.

All of the fundamental problems encountered by Ford result from the excessively high brake torques needed to attain the prescribed stopping distances. We believe that these stopping distances may never be practicable for some heavy duty vehicles without major new vehicle designs such as independent front suspensions or similar substantial departures from current practice." Letter from Ford Motor Co. to NHTSA, Apr. 1, 1974 (Doc. No. 74-10-No1-023).

Page 11a, n. 21 "'Finality' did not mean an end to amendments, nor to industry protestations."

— "Our fears arise from ample evidence (1) that the new vehicles built in accord with the Standard will be difficult to maintain, (2) that they will be uncontrollable where the antilock features of the front axle do not function as they are supposed to, and (3) that it is now shown that the unproved devices mandated by the rule are failing. . . ." Letter from ATA to NHTSA (Mar. 25, 1975) (Doc. No. 74-10-No15-004).

Page 11a, n. 22 "NHTSA acknowledged that production variables were affecting performance."

— "General Motors . . . indicated that similar 121 vehicles can register as much as a 20-percent difference in stopping distances as a result of uncontrolled variability in brake component performance. International Harvester, which until recently had supported 5-percent longer stopping distances on an interim basis, now points to certain variables, including brake linings, in requesting long distances on a permanent basis. Diamond Reo reported the same experience. . . ." 40 Fed. Reg. 12,797 (1975).

— "Petitions to reduce Standard No. 121's stopping distance requirements were received from six manufacturers and users of air-braked trucks and from Wagner Electric Corporation. . . . The manufacturers of components and vehicles argue essentially that production and test procedure factors introduce sufficient variability into the performance of their products that large "compliance margins" of overdesign must be built into each

unit to assure 100 percent compliance with the standard's requirements. These petitions assert that, as a result, vehicle designs have reached the maximum limits of brake technology and the brake systems can produce significant lateral instability and related poor handling characteristics. The petitions of users . . . argue that antilock systems, used by most manufacturers to meet the standard, are unreliable and constitute a safety hazard on the steering axle in combination with strong front wheel brakes." 40 Fed. Reg. 24,915 (1975).

Page 12a, n. 23 "The agency conceded that the requirements of the original Standard were difficult to achieve in a mass production situation."

— "[T]his agency has evaluated the submitted data which show variability of various components and concludes that the degree of variability can necessitate more aggressive brake packages than are desirable to achieve the stopping distances contemplated in development of the standard. One undesirable characteristic cited by PACCAR is the side-to-side handling problems which can arise during severe braking associated with any imbalance of the brakes. Ford data demonstrate the point at which tire aligning torque becomes negative and contributes to steering instability under severe braking. Other manufacturers conclude that the variability in brake assembly and other areas forces use of brake packages which approach the maximum in technological feasibility and leaves no room for a 'compliance margin'. In agreement that these problems can arise in some cases, NHTSA proposes an increase in the stopping distance permissible in a stop from 60 mph in the loaded condition on a test surface with a skid number of 75 (with corresponding changes at lower speeds)." 40 Fed. Reg. 24,916 (1975).

Page 13a, n. 24 "Nine months after the Standard went into effect . . . a public hearing was held."

— "The NHTSA has received reports that the new-introduced (sic) braking systems and antilock systems of some manufacturers, have not been operating properly, causing increased maintenance and the possibility of unsafe vehicle braking performance. Eight safety-related defects in the production systems have been reported to

the NHTSA, and recall campaigns are underway at this time."

° ° °

"To ensure that the data upon which the NHTSA relies are complete, the agency considers it imperative to collect all existing information on the operation of the new systems as soon as possible. For these reasons the NHTSA has determined that . . . a public meeting is desirable to discuss the field experience accumulated with the new vehicles." 40 Fed. Reg. 43,050 (1975).

Page 19a, n. 36 "One manufacturer informed NHTSA that it was required to introduce 40,000 new part numbers in its system alone as a result of the standard." Letter from International Harvester Co. to NHTSA (1975) (Doc. 75-16-N02-005).

Page 19a and 20a, n. 37 "As new components . . . were mass produced, and subsequently put together in a unique combination, grave problems developed."

—NHTSA, Listing of Safety Defect Recall Campaigns (1975) (Doc. No. 75-16-N02-010) which lists 11 separate recall campaigns involving brake components, NHTSA identification numbers 75-0012; 75E-025; 75E-027; 75-0029; 75E-029; 75E-030; 75E-031; 75-0046; 75-0050; 75-0051; and 75-0106.

—ATA (American Trucking Asso.) letter to NHTSA, March 29, 1974 (Doc. No. 74-10-N01-014) enclosing an engineering report titled "National Highway Traffic Safety Administration Sponsored Brake Demonstration Held at East Liberty, Ohio on November 7 & 8, 1973." The conclusions:

"1) Big, powerful front brakes with or without anti-lock cause real problems in steering control during high rate stops on split coefficient surfaces.

2) Anti-lock failure on a new tractor pulling an older trailer causes serious trouble in a panic stop. Trouble also occurs when pulling the new trailers under such conditions.

3) A front brake line failure causes trouble either with or without anti-lock but causes trouble in proportion to

the front brake torque output, therefore 121 type tractors are more troubled than the older vehicles.

4-a) Some new tractors could stop both tractor and trailer most satisfactorily with a severed trailer control line, others could not.

4-b) One tractor tested with an open trailer control line drained both tractor reservoirs to a level below 60 PSI and had to be recharged before it could drive off the test pad.

4-c) Of the ten new tractors at the test site, only seven were tested with an open trailer control line. Of these seven tractors, only two appeared to be able to make a trailer spring brake application after such a failure. One of the remaining five, during the ATA portion of the test, demonstrated how a new valve will control this. We are told that one of the vehicles not tested in this mode also has this capability by means of a different plumbing system.

5) Several tractors, submitted in good faith by suppliers could not move from the skid pad after but *one* stop by use of their secondary system.

6) Anti-lock increases panic stopping distances but does provide better control under such conditions.

7) One pre-121 tractor and trailer, typical of those in the supplying fleet gave much shorter stops on wet pavement than any of the new 121 type combinations.

8) A rear brake failure on older tractors increases stopping distances more than such a failure does on the new tractors.

9) Failure of anti-lock on the new trailer does not cause as much trouble as tractor anti-lock failure."

—Letter from NHSTA to Weyerhauser Co., Mar. 8, 1976 (Doc. No. 75-16-N05-067) replying to that company's letter requesting information on EMI (Electric Magnetic Interference). NHTSA stated that "Kelsey-Hayes Corporation and Eton Corporation anti-lock systems have been reported as susceptible to EMI" which can activate the anti-lock system causing a release of air pressure. "Isolated reports of EMI in Rockwell and AC Division (General Motors) anti-lock systems are being investigated by these manufacturers." NHTSA has two research contracts

in progress on this problem, one since July, 1974 and the other since October, 1975. Ford "recently reported that part of its heavy truck line may be susceptible to EMI."

—Testimony of Holly Farms Poultry Indus. at TR 176-178, October 1975 (Doc. No. 75-16-No2-042). "On June 1, 1975, we put into service 67 new trailers equipped with anti-lock systems. . . . we have inspected 26 anti-lock systems using the instructions and procedures outlined by the technical representative of the anti-lock system manufacturer. Of the 26 systems inspected, only three were operative. Of the 26 inspected the following number of components have been repaired or replaced as indicated: wheel sensors, 18 replaced, task valves, 42 replaced, hub caps, 4 replaced, computers, 14 replaced, calm [sic] valves, three replaced, brake chambers, two, shorted wiring harness repaired, one. . . . To date, we have had five drivers report no brakes on the first application on these trailers. We have a lot more reports. The spring brakes went into lock up and emergency due to the failure of the task [sic] valve, on open highways. Four lock downs occurred on the road and 25 occurred on our premises. As of September 18th, we knew of seven additional wheel sensors that needed replacing, also by visual inspection of trailers on our lot, we found nine computers out at this time . . . This does not mean these computers are necessarily defective, but does indicate some failure in the system. . . . We have six new tractors equipped with the anti-skid with similar problems."

—Testimony of Wesco Truck & Trailer Sales at TR 518-19, concerning tests conducted May 2 and 15, 1975, attended by members of the California Highway Patrol commercial section:

"a) several failures of modulator valve and computer;

b) trailers without anti-skid system stopped just as straight and within shorter stopping distance fully loaded on dry surface;

c) intermix of 121 and non-121 trailers resulted in jack knife.

(2) B.F. Goodrich components—we started our program to comply with 121 with B.F. Goodrich components.

a) computers have failed before delivery: 30 percent. Finally necessitating 100 percent replacement of this component;

b) modulator valves failed prior to delivery: 10 percent;

c) ratio relay valves locked up on highway twice, for what reason we haven't been able to figure it out. 100 percent replacement of all units with new valves;

d) sensor drive, emergency recalls: 100 percent;

e) hub caps will not hold oil inside hub: 100 percent. B.F. Goodrich has not given us a solution to this as of this date;

f) hose assembly failures upon installation: 20 percent;

g) wire connector failures: 10 percent;

h) fuse box failures: 60 percent. Finally necessitating 100 percent replacement of this component;

i) since 9-1-75 we have had two B.F. Goodrich 1800-2 updated computers fail prior to customer delivery during check out procedure. B.F. Goodrich still has no solution."

Page 20a, n. 39 Problems with antilock warning systems.

—NHTSA Safety Defect Recall Campaigns, see Page 19a and 20a, n. 37, *supra.*

—Letter from Hy-Vee Food Stores to NHTSA, Mar. 1976, Doc. No. 75-16-No2-173), concerning their seven trailers with B.F. Goodrich antilock systems " that malfunction without notice, dumping all the air from the system and leaving the unit with locked brakes. Also we have five trailers with Wagner systems that malfunction without notice."

—Testimony of Leaseway Transp. Corp. at TR 231-33, Oct. 1975 (Doc. No. 75-16-No2-042).

"Our leasing company in Saint Paul, Minnesota took delivery of four International Harvester tractors in July. The recall notice came at about the same time so the tractors were held out of service until details of the recall were known. Upon road testing, one of the tractors with no trailer, company personnel experienced complete lock-up of all brakes at speeds of 10, 15, and 20 miles per hour.

The local IHC branch advised that the antilock is 'not supposed to function under 32 miles per hour.' The warning lights on these units do not indicate a malfunction and the tractors are now in service with under 800 miles on each of them."

—Testimony of Roadway Express at TR 269. "We have had mechanical failures that rendered the antilock inoperative but with no failure light indication. Had this occurred on the steering axle during an emergency stop of a full 121 tractor, it would have been dangerous. Also, we have experienced antilock failure that was only indicated at brake application when it would have been too late. Bear in mind at this point that we can expect fully 46 failures per day as it exists today. After FMVSS Number 121 had been in effect fully ten months on trailers and eight months on tractors, our antilock suppliers are revising computers and redesign of the failsafe modules and attempting to get the hardware to stay in position and the electrical system to function."

—Testimony of Freightliner Corp. at TR 296 concerning difficulties detecting problems during production:

"One possible explanation for not detecting the problems in the first five checks can be gleaned from a review of the fault detection circuitry of commercially available systems. The following listed failures obviously do not constitute total electrical system failure: as stipulated in FMVSS-212 and, thus may not cause actuation of the warning light. In other words, these failures can occur but may not be signalled to the driver. In my prepared testimony here, already submitted, I list these failures and the possible results. The failures go anywhere from excessive air gap to a wobbly rotor to a small amount of runout and failure in the wheel speed sensor, low voltage supplied and poor grounding, failure in the system wiring and computer, and failure in the solenoid valve. The result of these failures can be a possible loss of braking, complete loss of breaking, rapid cycling, and finally reverting to the system without antilock."

Page 20a, n. 41 and 21a, n. 42 "Radio frequency interference was a unanticipated problem, causing the antilock to malfunction and the brakes to fail without warning."

—Rockwell International Corp. testimony, TR 150 Oct. 1975 (Doc. No. 75-16-No2-042).

"The final point I wish to mention is the much publicized radio frequency interference. Radio transmissions can have an effect on the operations of a computer. Although we have not completed our investigation of RFI phenomena, the potential exists for reduction in brake retardation force, but the degree of this has yet to be determined."

—Testimony of General Motors Corp at TR 361.

"In some cases, the operation of the radio has influenced the operation of the anti-lock system. Ths phenomenon is technically known as electromagnetic interference, EMI, but is more commonly referred to as radio frequency interference, RFI. General Motors pre-production field testing, involving hundreds of anti-lock axle systems on many vehicles throughout the country, was free for any incidents wherein RFI was reported. As indicated by field reports since 121 became effective, the absence of RFI during General Motors pre-production field test program was not an accurate indication of what might be truly expected when greater numbers of complete FMVSS 121 systems are used in the field."

—Letter from NHTSA to Weyerhaeuser Co., *supra*, page 20a, n. 37, *supra*.

—Letter from NHTSA to Congressman Shuster, Sept. 17, 1975 (Doc. No. 75-16-No2-032).

"The NHTSA has not established a Review Board to investigate brake failure problems, but agency staff are carefully monitoring all reported instances of 121 brake system malfunctioning. To be sure, the number of such reports is substantial, and system manufacturers have discovered several unforeseen defects which require correction."

—Testimony of Kelsey-Hayes Co. at TR 391 (Doc. No. 75-16-No2-042).

"The second recall pertains to radio frequency interference, commony known as RFI. This recall, and the problem from which it arose, applies only to one of the

three systems we supply. Since there has been a substantial amount of publicity about RFI, much of which is inaccurate, we feel that it is appropriate to explain the facts involved. The facts are that a number of skid control malfunctions, including temporary release of the brakes, can occur when the skid control computer of this system is in close proximity to a relatively high powered radio transmitter broadcasting in a narrow range of radio frequencies. . . ."

—Testimony of California Highway Patrol at TR 466. See appendix H to this brief, infra.

Page 21a, n. 43 and 44 "When the antilock system failed, the high torque front brakes, in the opinion of the industry, created a serious safety problem. Among the problems encountered were lateral instability, jackknifing, wheel lockup, and 'pulling' to one side."

—Ford letter, *supra,* notes 16.

"When an antilock system fails, the problems of vehicle instability are substantially increased. Drivers quickly adjust to the performance of an antilock system and will rely on the system's capability to modulate automatically the brakes. A driver who is accustomed to the antilock system cannot, in our opinion, change his behavior fast enough to prevent wheel lockup during an emergency stop if the antilock fails to operate. When this happens, the result can be loss of steering control and vehicle instability. Under this circumstance, rollover would not be an unlikely consequence." (pg. 4)

—Letter from General Motors Corp. to NHTSA, Apr. 1, 1974, (Doc. 74-10-No1-26)

"General Motors has previously stated its concern (USG 985, November 7 and 28, 1973) over the potential serious effects on highway safety (loss of vehicle control and potential rollover) that could result from placing a wheel lock control system into service that did not have proven reliability. In this docket, the NHTSA has stated that drivers will not become reliant upon such systems and that they believe a failure will have a limited effect on vehicle control. General Motors believes that once a performance level for a vehicle has been established, operators will become sufficiently accustomed to that level and that any significant change could have an adverse effect upon the operator's ability to control the vehicle. Such a sudden change in performance would be critical if the level of braking performance is suddenly increased or decreased. Further, General Motors believes that a failure on a single axle wheel lock control system of a vehicle equipped to meet MVSS 121 can have a significant effect on vehicle control. A condition permitting locked wheels on a front axle can result in loss of steering capability and locked rear wheels create directional instability." (pg. 4-5)

—Letter from General Motors Corp. *supra* n. 16 reporting on three test track accidents in which trucks with Safety Standard 121 equipment overturned during braking maneuvers. (Section 3 of letter, pp. 1, 3, 9, and 10.)

"In the MVSS 121 Petition filed November 8, 1973, General Motors cited two severe accidents in which trucks were inadvertently overturned while testing MVSS 121 brake systems. Since the petition was filed, a third truck has overturned, this time from a sudden and complete application of the spring brakes to the rear axles of a tractor without its trailer.

We have studied these accidents carefully to understand the fundamental causal factors involved. We felt we must know whether or not these accidents were related to some unusual circumstances presented by the experimental test conditions, or if these new brake systems could produce similar accidents on the highway in normal customer driving. Here are the results of our analysis.

All three accidents had these common ingredients:

1. The drivers were experienced in running truck brake tests, and were familiar with the vehicle.
2. The rear brakes of the vehicle were applied, fully, locking the rear wheels.
3. The vehicle turned slightly out of its straight line path and then overturned." (p. 1)

"We must conclude, therefore, that since driver reactions in these situations are unpredictable, that possible failure of the rear wheel lock control presents a substantial safety

hazard which may or may not be controllable by the driver. If uncontrolled, however, the consequences of lockup may be very drastic, including vehicle rollover." (p. 10)

—Testimony of Wilson Freight Co. at TR 211, Oct. 1975, (Doc. No. 75-16-No2-042).

"The very short development period has put into service skid control systems composed of components which have not been thoroughly field tested. This can be verified by checking the number of recall campaigns in this area. Virtually 100 percent of the skid control systems now in service have had at least one recall campaign.

It has been said of 121 that it can help you but can not hurt you. Meaning that if the skid control portion fails you still have good sound brakes, that is not true. . . .

New brake standard tractors are equipped with large steering axle brakes. These are approximately 70 percent of the brakes on a non-steerable axle. These brakes are so severe that heavier axles, axle mountings, and steering linkages had to be developed to keep these axles from being literally torn off the vehicle during brake application. With brakes of this magnitude, during a panic stop, with inoperative skid control the driver will have absolutely no control over the vehicle or combination of vehicles."

—Testimony of Leaseway Transp. Corp at TR 234.

"Basically the safety hazards we see down the road all revert back to the use of high torque brake lining, particularly on steering axles. As long as this high torque capability is under the control of an efficient antilock device, no problems will occur. This unfortunately, however, has not been the case. The antilock systems are not sufficiently reliable to be of safety benefit at this time. While they all revert back to 'pre-121' braking in the event of antilock failure, this too is a dangerous situation as long as the brakes are lined with the aggressive material necessary to comply with the standard. Experience has shown this causes wheel lockup immediately."

—Testimony of Queens Transit Corp. TR 510.

"One of the assurances given to us when 121 was made

final was that the beautiful part about this system was if you lost the anti-skid or anti-lock device, it would revert to normal braking. What a great piece of fiction this turned out to be. It not only didn't revert to normal braking, but it reverted to no braking."

—NHTSA, Internal Progress Reports B-7 (1976) (Doc. No. 75-16-No2-183) discussing NHTSA's Safety Research Laboratory's inability to ascertain why a Mack tractor had steering pull during braking.

"*Mason-Dixon Lines Tractor-Trailer Braking Problem Evaluation*—The Mack tractor that SRL has been evaluating for steering pull during braking was taken to the Mack dealer in Baltimore during March for installation of modifications developed by Mack to eliminate the problem. . . .

The tractor was then returned to Aberdeen Proving Ground for tests to evaluate the effectiveness of the modification. The vehicle was tested as-received . . . and a left pull of the same magnitude experienced before the modification was evident. . . .

This summary supports the same conclusion that was reached before the tractor brake system modification; i.e., the left front brake is inherently more effective than the right not because of differences in linings or drums but because of other components within the brake assembly. We had hoped that the replacement of the S-cams which were a suspected cause of the difference in brake effectiveness would solve the problem. They apparently did not."

Page 21a and 22a, n. 45-47 Failure of users to advise manufacturers of problems and the results of random spot checks.

—n. 45. Testimony of Consolidated Freightway representatives concerning 65% malfunction rate of antilock devices. TR 17-24, Oct. 1975 (Doc. No. 75-16-No2-042).

"We have, however, put in service in April, May, and June of this year 256 45 foot semi-trailers in our U. S. motor carrier operations. While these trailers have been used for only seven months, I had our maintenance people make a random check of 121 equipped trailers through Tuesday, October 7th, and report all significant informa-

tion on the 121 brake systems. The results of this one day survey are written in an appendix to these remarks, but in summary out of the 37 121 equipped trailers we inspected we found 24, or nearly 65 per cent, with nonfunctioning antilock systems." (p. 17)

"I am aware that NHTSA characteristically will say that most of the things found wrong with our trailers in this inspection were small items and easily correctable. This is true but none of the trailers had been in service over 180 days and most had been in service no more than 90 days. Burned out fuses and defective wiring make the system just as inoperable as major problems. Furthermore, the manufacturer has now advised us that the antilock system problem is in the transducer and we are going to mount a retrofit program on all 256 trailers." (p. 18-19)

—n. 46. Report of 59% nonoperative rate for antilock systems, in letter from General Motors Corp. Apr. 1, 1974, *supra* n. 43, at pp. 8-9.

"General Motors has endeavored to closely control and follow its wheel lock control field test installations and correct any malfunction. The operators of such fleets have been requested to *immediately* notify General Motors by telephone of any wheel lock control system failures and have been assured that service of such systems would be available within 24 hours. In addition, General Motors has conducted periodic inspections of these field installations. Nevertheless, a recent periodic survey revealed 59% of the vehicles inspected in 4 separate test fleets had inoperative wheel lock control systems, yet these trucks remained in use. . . none of these failures had been reported by the drivers or owners to General Motors despite our specific request for immediate notification of any malfunction."

—n. 47. Letter from Consolidated Freightways to the Secretary of Transportation, Apr. 6, 1976, (NHTSA Reliability File, Doc. 75-16-No2-010), concerning 48% failure rate.

"I sent you a copy of my Mailgram . . . regarding a check made at Cincinnati during the week of March 22nd, of trailers equipped with antilock devices mandated by

FMVSS-121. . . . You will note that 48% of the trailers checked were found to have the antilock devices inoperative."

Page 22a, n. 48 Testimony to NHTSA concerning failure of certified antilock systems at or shortly after delivery.

—Letter from A-P-A Transport Corp. in NHTSA reliability file, Feb. 5, 1976 (Doc. 76-16-No2-010).

"In June 1975, we took delivery on 10 R Model Macks equipped with Eaton antiskid controllers. . . .
Our experience—

- The controller that is supposed to detect problems and give a warning light was inoperative. Without this detection device, problems in the systems could go unnoticed.
- In service, several units reported that warning lights for the antiskid system were coming on and staying on for no apparent reason.

In May of 1975 we purchased seven new Gindy Trailers. The trailers were put into service during the early part of June. In July, we received a letter from Gindy advising of a defect in the relay valves which would cause a slow air leak that would eventually lock the parking brakes on the trailers. Just one week after the first letter, another one came pointing out component failure in the drive unit in the in-axle wheel speed sensor. The manufacturer recommended that the units be removed from service while repairs were effected. Total time for repairs to be accomplished: four weeks."

—Letter from J. P. Silvey Trucking to NHTSA, Oct. 7, 1975, (Doc. No. 75-16-No2-052) concerning purchase of "three sets of trailers on June 10 equipped with the B.F. Goodrich system. On July 7 all fuses were removed as a result of a recall letter. Out of the 9 fuses removed 5 were found to be blown—representing a 55% failure rate in less than 30 days. To date this system has not been made operational."

—Testimony of Leaseway Trans. Corp. at TR 230 (Oct. 1975) (Doc. No. 75-16-No2-042). See page 21a, n. 43 and 44, *supra*.

—Testimony of Roadway Express at TR 276, (Sic. TR 267).

"Roadway and others have learned from sad experience that there is no substitute for field testing. We were testing three of the leading brands of antilock on 20 line haul tractors. . . . the projected cost of maintaining the best of the three antilock systems—three units on the tractor, two units on the trailer—during a six year life of the fleet of 2,395 tractors and 7,697 trailers are, for the Eatons, $1,099,350 for the tractors, $737,988 for the trailers for a total of $1,837,338 for the fleet.

The other two systems were so plagued with repeated failures that they cannot be considered for use in our fleet and consquently no projected costs are presented. . . . we stopped repairing failure in the two systems because of the excessive downtime and expense. The Wagner units were later reactivated based on assured product improvement with relocation of components only to see failures start within 14 days of these alleged improvements. . . . In the meantime, due to the disastrous performance of two of our test systems we expanded to a fourth system, Kelsey-Hayes, on five units approximately three months ago and, in this short time, have had four failures."

APPENDIX F

SUMMARIES OF TESTIMONY CONCERNING PROBLEMS EXPERIENCED

TESTIMONY CONCERNING ANTILOCK DANGERS

Wagner Electric. The main problem is "aggressive braking action and excessive front axle brake torque, primarily on tractors." In support of a request for lengthening of minimum stopping distances and significant reductions in steering axle brake torque, "reductions of this magnitude will improve control of the towing vehicle by the driver, will reduce the probability of front end dive, reduce the tendency for front axle roll, and diminish the abnormal steering reactions that may occur because of dive, roll, and excessive torque." (Kourik, M.T. 33 and 36.)

International Brotherhood of Teamsters. In discussing elimination of the antilock requirement there would be more concern "with the antilock system off and the more aggressive brake system there because you would get locked up and then you would have a unit out of control....it would be a big mistake to propose to take off the antilock system and leave the aggressive brakes on." (Durham, M.T. 57.)

Holly Farms Poultry Industries. The addition of front wheel brakes makes these vehicles dangerous and unpredictable. (Whittington, M.T. 183.)

United Parcel Service. Information regarding high torque front brakes "overwhelmingly justifies the fear of the loss of

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steering control and vehicle stability upon failure of front axle antilock." (Lewis, M.T. 189.)

Wilson Freight Company. "It has been said of 121 that it can help you but cannot hurt you. Meaning that if the skid control portion fails you still have good, sound brakes, this is not true....new brake standard tractors are equipped with large steering axle brakes....these brakes are so severe that heavier axles, axle mountings, and steering linkages had to be developed to keep these axles from being literally torn off the vehicle during brake application. With brakes of this magnitude, during a panic stop, with inoperative skid control the driver will have absolutely no control over the vehicle or combination of vehicles. Another factor that must be considered concerning the driver is driver dependence on big strong brakes with skid control. Any deviation from what the driver expects could result in trouble." (Strout, M.T. 211-212.)

Leaseway Transportation Corporation. "The safety hazards we see down the road all revert back to the use of high torque brake lining, particularly on steering axles. As long as this high torque capability is under the control of an efficient antilock device, no problems will occur. This unfortunately, however, has not been the case. The antilock systems are not sufficiently reliable to be of safety benefit at this time. While they all revert back to 'pre-121' braking

in the event of antilock failure, this too is a dangerous situation as long as the brakes are lined with the aggressive material necessary to comply with the standard. Experience has shown this causes wheel lockup immediately." (Speere, M.T. 233-234.)

California State Highway Patrol. Reported on two test demonstrations. The first was at International Harvester's Indiana plant. "There were three tests of bus and truck chassis -- one antilock system failed, tires locked, there were flat spots on tires, warning lights did not indicate electrical failure. During a high speed 50 m.p.h. test...there was extreme bouncing and jerking of the vehicle. A high speed, 50 m.p.h. stop with the school bus, expelled so much air that the warning lamp and buzzer began to operate because the low air warning device was activated." The second demonstration was by WESCO Truck and Trailer Sales of Woodland, California. "In the demonstration there were instances when the 121 did work. When it was compared with a comparable demonstration by a non-121 equipped tractor and semi-trailer, that the stopping distances were somewhat greater and for the most part not considerably shorter. There were cases when the 121 system failed....on one of these failures... when the computer on one axle or that controlled one axle failed. Unlike what we thought would happen, the normal braking

did not take over. It appeared as though the operation of the brakes on that axle was actually interfered with." (Kynaston, M.T. 465-466.)

Motor Coach Industries. "A loss of drive axle brakes due to an anti-skid malfunction is very critical, especially at a moderate speed." (Derragon, M.T. 92.)

Transport of New Jersey. "At first it was claimed that this anti-lock device was 'failsafe'. Theoretically, if the anti-lock portion of the braking mechanism was not in effect, the brake's normal ability was still present. However, time and circumstances have proven that the anti-lock device on transit vehicles is not 'failsafe' and indeed the device failed, creating at least two hazardous conditions, as follows:
One: For one of several reasons the sensor 'thinks' the bus is skidding, usually at speeds between 5 and 15 m.p.h. and disengages the ability of the bus to brake. Then when the driver applies the normal brake pressure, he suddenly realizes that no braking action is occurring and he instantly increases the application of pressure to the brake pedal. During this period of time the bus has in many instances rolled a sufficient distance to either impact another vehicle or cause a 'near-miss'.
Two: During this short period of time when the driver realizes that his initial braking action is having no effect, and he applies more brake pressure, the sensing device realizes that the bus is 'not skidding' and permits the braking effort to take effect.

"With a heavy brake pressure, the new softer linings 'grab' and a very severe braking action results which frequently causes standing passengers to be thrown to the floor or seated passengers thrown out of their seats." (Gilhooley, M.T. 125-126.)

Briggs Transportation Co. With regard to drivers' reports that they feel that when the brakes are operating properly everything is fine, "but when the anti-skid device does not work and they apply the brakes, that the brakes are too severe than what they are used to operating." (Johnston, M.T. 202.)

Mass Transit Administration, Maryland Department of Transportation. "One of the assurances given to us when 121 was made final was that the beautiful part about this system was if you lost the anti-skid or anti-lock device, it would revert to normal braking. What a great piece of fiction this turned out to be. It not only didn't revert to normal braking, but it reverted to no braking....this lack of a 'failsafe' backup, in my opinion, is a very, very dangerous precedent to be established in vehicle safety regulations." (Giuliani, M.T. 509-510.)

SUMMARY OF TESTIMONY
CONCERNING ANTILOCK PROBLEMS
— BY ANTILOCK MANUFACTURER

(a) Kelsey-Hayes. Greyhound made a test installation in November, 1970. To keep it in service required "constant maintenance and replacement of the components required." These problems were reported to NHTSA in face to face meetings in July, 1973 and April, 1974. (Steber M.T. 66-68.) Leaseway Transportation reported the only solution to date for the radio frequency interference on International Harvester vehicles was dashboard decal warning to the driver not to transmit while braking. Four tractors were received in St. Paul in July but were held out of service until details of the radio frequency interference problem were known. Upon road testing, one of the tractors experienced complete lockup of all brakes at speeds of ten, fifteen and twenty miles per hour. The Vineland Branch has fifteen trailers, eight of which dump all air when they are uncoupled. (Speere, M.T. 229-231.) Roadway express installed five units three months ago and has four failures to date. (Dawson, M.T. 267.) In a test demonstration by International Harvester representatives of the California State Highway Patrol noted that in three tests one antilock system failed, and in another high-speed stop so much air was expelled that the low air warning operated. (Kynaston, M.T. 465.)

(b) B. F. Goodrich. This company has had three defect recall campaigns. On September 9, 1975, its personnel met with NHTSA officials and reported that the first defect campaign involved 14,700 computers with the failure rate of approximately 20%; the second involved a sensor drive problem which required replacement of 52,082 components; the third involved a ratio relay valve which caused the spring brakes to come on when not called for, the recall involving 58,000 units. (NHTSA Document 75-16-NO2-023.) In a meeting on September 10, 1975, Mack Trucks reported to NHTSA that there had been 37 field problems with B. F. Goodrich antilock devices. (NHTSA Document 75-16-NO2-024.) Based on the number of trucks involved, this would be a failure rate of 4.8% for six months, or 9.6% a year. Wayne Daniel Truck, Inc. reported that of the five trailers it received with B. F. Goodrich components, only one was still functioning by the time the trailer reached the truck terminal from the factory, a distance of only 250 miles. Before this one traveled another 250 miles, its electronic control system failed. (Daniel

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M.T. 276.) A report submitted by Don Tripp Trucking involved four trailers described as the most unfit piece of equipment seen in thirty years. There were continuous problems of air loss, brakes locking and brakes surging. They had not had one complete week with any one trailer where it all worked properly. (Don Tripp, M.T. 281.) Wesco Truck and Trailer Sales reported their experience with B. F. Goodrich antilock was that 30% of the computers and 10% of the modulator valves were defective on delivery. They also had problems with ratio relay valves locking up on the highway, emergency recalls of sensor drives, hubcaps that would not hold oil, a 20% failure rate on hose assemblies, a 10% failure rate on wire connectors, and a 6% failure rate for fuse boxes. (Sambucetti, M.T. 518-519.)

(c) Rockwell. This company has had two defect recall campaigns. Consolidated Freightways has purchased 256 SS-121 equipped semitrailers since April, 1975. A random check was made, ending October 7, and of the 37 trailers checked, 24 - or nearly 65% had nonfunctioning antilock systems. (White, M.T. 17-24.) Greyhound installed a Rockwell antilock on a test unit in December, 1972, two additional installations were made in November, 1974 and one in December, 1974. These test buses have remained in service only with constant maintenance and replacement of components. (Steber, M.T. 66-67.) A Rockwell representative testified that its problems are "excess sensor-to-rotor gap, computer failures, loose connections, radio frequency interference, and lack of understanding of system operation and maintenance." (Flannery, M.T. 145-146.) Garrett Freightlines has 454 trailers with Rockwell antilock, and the computers have had to be replaced on all of them. (Garrett statement submitted to public meeting, M.T. 281.) General Motors uses Rockwell antilock on its bus coaches. On a number the axles were assembled with improper sensor-to-rotor gap which could result in an antilock computer indicating that a wheel lockup condition existed, resulting in a reduction in brake retarding force. (Martin, M.T. 364.)

(d) Berg Manufacturing Company. In July, 1973 and April, 1974 Greyhound reported to NHTSA the continuing problems it was experiencing with all the antilock devices it was testing, including a Berg device installed in March, 1972. (Steber, M.T. 66-68.) Holly Poultry Farms has Berg and B. F. Goodrich antilock devices in use. On June 1, 1975, 67 new trailers were put into service and a recent inspection of 26 showed that only three were operative. Defective parts included wheel sensors, valves, hubcaps, computers, brake

chambers and a shorted wiring harness. Five drivers reported no brakes on first application. On open highways the spring brakes go into lockup and emergency due to valve failure. Four lockdowns occurred on the road. Six new tractors are in use. The first one delivered had its computer warning light on, which took two days to correct. One tractor failed in California and they had to block the air off the front axle to bring the tractor back. On the second tractor a slight application of the brakes resulted in the brakes failing to release. (Whittington, M.T. 176-178, 184.) Kroblin has reported an accident because of a failed Berg antilock; there was an apparent malfunction of the relay valve on the trailer rear axle resulting in no braking action by that axle, causing a semitrailer jackknife. (Barton, M.T. 206.)

(e) Eaton. In a September meeting with NHTSA officials, Mack Trucks reported 20 field failures with Eaton components. (NHTSA Document 75-16-NO2-024.) Based on the number of trucks in field use this would be a failure rate of .87% for six months or 1.7% per year. Leaseways Canton Tank Carrier has twelve Mack tractors with under 2,200 miles on each, and have had three computer failures and five electrical failures. In Chicago several units were delivered with nonfunctioning antilock systems. (Speere, M.T. 232.) O'Boyle Tank Lines put sixty new tractors into operation on April 1. Problems have included changes of four axle controls, two wheel sensors, and one electrical solenoid. Their problems include loose ground connections and terminal wires, plug wires which have pulled apart, tightening of slack adjusters causing brake hangup, and low voltage. Antilock warning lights are activated by hitting a rail at a railroad crossing or by hitting a chuckhole. (Sitler, M.T. 262-264.) Arkansas-Best Freight System submitted a statement at the meeting concerning experience with 175 Fords. Based on a three-months failure rate, it is possible they will have a 100% failure rate in fifteen months. The statement contains a two-page list of parts which had to be repaired or replaced, totaling thirty-six failures up to September 3, 1975. (Arkansas-Best, M.T. 281.)

(f) General Motors. At a meeting on September 3, 1975, General Motors reported to NHTSA that they had very little data on field experience. (Document NO. 75-16-NO2-026.) Leaseway Transportation's Cleveland subsidiary is operating five GMC trucks with AC systems, two of which have had to go back for electrical problems, one of them on four occasions. Its New Jersey branch has two vehicles, both with electrical problems. One was due to poor wiring and the other is waiting for GMC to track down the problem. (Speere, M.T. 230-231.) Gordons

Transports, Inc. for test purposes installed antilock on ten trucks, five with Wagner systems, and five with GM's AC system. During the testing, there was continuous repair and upgrading by the manufacturer. The final upgrading of the systems occurred in January, 1975 and immediately following the installation they had troubles with the electrical cord and the connectors at the "Black Box." These malfunctions are still being experienced. (Statement of Gordons Transports, M.T. 281.)

(g) Wagner Electric. Gordons Transports report re Wagner is set forth in the preceding paragraph. Blackhills Oil Marketers, Inc. in a memorandum submitted to the meeting reported two units had been in service for six weeks, and both failed. The first unit was returned to the dealer twice a day for three consecutive days; it would operate properly in the shop, and then fail again. Finally, on complete disassembly it was found that the sensor in one wheel hub was loose. The unit was put back into service only to fail before completing the first trip. The second unit failed in the same manner, was repaired, and failed on its first trip. (M.T. 281.) Leaseways Baltimore truck leasing operation had had six trailers in operation for two months and has had two wheelfires caused by dragging brakes. Its Texas subsidiary has two trailers, both of which have a habit of continuous cycling of the antilock system while in traffic, which continues until the trailer's air tanks are exhausted and the compressor can no longer keep up. (Speere, M.T. 231-232.) Roadway Express tested Eaton, Kelsey-Hayes, and Wagner antilock systems on twenty tractors. The Kelsey-Hayes and Wagner systems were so plagued with repeated failures that they could not be considered for use. The Wagner units later were reactivated based on assured product improvement only to see failures begin again within fourteen days. (Dawson, M.T. 267.) About 65% of Freightliner's vehicles use Wagner antilocks, about 30% use Rockwell, and the remainder have Kelsey-Hayes. As of the time of the October, 1975 meeting, Freightliner had only 460 trucks with warranty registration. 43 had experienced electrical problems or a 9.4% failure rate. The average in-service time for these vehicles is only 1.6 months, an average of 13,183 miles per vehicle. 131 trucks were monitored at two of Freightliner's plants for the period September 23 through October 8, 1975. Only 81 of the units went through assembly without problems. Defective components in the remaining 50 included four computers, two modulating valves, and one warning module. Wiring problems were encountered in sixteen cabs and seven chassis, ten wheel speed sensors had

problems and there were twelve loose or unplugged connectors. Even after continued testing during the assembly, dynamometer testing revealed problems in 18% of the vehicles. (Murphy, M.T. 293-295, 301.)

TESTIMONY CONCERNING SS-121 - THE TRUCK EXPERIENCE

Holly Farms Poultry Industries operates over 1700 vehicles over 26,000,000 road miles per year. On June 1, 1975, it received 67 new trailers equipped with antilock. Recently they inspected 26 systems using the instructions and procedures outlined by the manufacturer and found that 83 parts had to be repaired or replaced and 54 adjustments were needed. Estimated cost $15,000.00 to accomplish this work on all 67 of the trailers, not including out of service time. Five drivers have reported no brakes on first application. They've experienced spring brake lockup on the open highway, 4 lockdowns on the road and 25 on the premises. On September 18, they found 7 additional wheel censors and 9 additional computers out. They have 6 new tractors. The very first one was delivered with the computer warning light on. It took two days to repair. One tractor experienced a front wheel brake failure of some type in California and they had to block the air off to the front axle to be able to bring the tractor back to the shop. On a second tractor, a slight application of the brakes resulted in a situation where the brakes would not release, which might be a valve or an antiskid problem. (Whittington M.T. 174-179).

Truck driver, Don Bennet, Northwest Agricultural Cooperative Association, Ontario, Oregon. Eleven of its 50 trucks have 121 components. These have experienced 2 computer failures in 3,000 miles. When it fails the front wheels slide which is a suicidal condition. He has had 20 years truck operation without an accident but has had 2 close calls in the last three weeks due to brake grab pulling the truck into another lane. He has experienced lockup at 20 miles per hour in snow. The previous Sunday night in Omaha, Nebraska, his partner, with 21 years of driving experience without an accident, had one. He could not say for sure that this brake would have prevented the accident, but with the old type brake they would have stopped a lot faster than they did. (Bennet M.T. 185-186).

United Parcel Service. The greatest flaw they see in SS-121 is that it is aimed at the manufacturers with no regard for user problems. They've experienced compatibility problems between pre and post 121 equipment when operated in double and triple combinations. When descending long mountain grades with continuous or intermittent low effort braking, the more aggressive 121 equipped trailer or dolley performs more work than the pre-121 equipment, resulting in overheated or burnt out brakes. They've been experiencing fast lining wear, drum heat cracks, and burned linings. (Lewis M.T. 186-190).

Kroblin Transportation Systems has had an accident caused by a SS-121 failure. The trailer was equipped with a Berg system. At approximately 6,501 miles, the tractor semi-trailer jackknifed during a successful attempt to avoid a collision with an automobile which drove out on to the roadway and stopped directly across both lanes of traffic in which the unit was operating. The cause of the jackknife apparently was malfunction of the relay valve on the rear axle of the trailer resulting in no braking action by that axle. The driver had noted no problems previously. (Barton M.T. 206-207).

Wilson Motor Freight operates almost 5,000 heavy-duty vehicles in more than 25 states. Virtually every system has had to be modified in recent weeks and every modification introduces new circumstances which may be unsafe and unreliable. (Strout M.T. 207-208).

Johnson Motor Lines as yet has no complete SS-121 equipment. With those they have, they have experienced 8 road failures and 6 shop failures because of relay valves; 8 road failures and 10 shop failures because of tractor protection valve failures; and 4 road failures because of trable valves. (Hampton M.T. 215-216).

Leaseway Transportation Corporation is a holding company with 170 subsidiaries engaged in all forms of motor transportation and distribution with about 55,000 pieces of equipment and about 31,000 airbrake units. They purchased approximately 7,400 air braked vehicles in 1974. To date in 1975 they have purchased only 3,100 units, and only 250 with SS-121 components. The remainder were purchased from inventory. The reason for the sharp decline in their purchases is the increased cost of the total vehicle and the unknown reliability of the antilock system. They have a continual high maintainance expense with SS-121 vehicles. Prior to the effective date of the standard, they conducted a test program over a one-year period involving approximately 100 vehicles using all 7 of the available antilock systems. Research disclosed unreliable operation for all of them which caused unsatisfactory maintainance and safety performance. (Speece M.T. 226-229, 237).

O'Boyle Tank Lines put 60 new tractors with Eaton system components into service on April 1, 1975. They had have to change 4 axle controllers, 2 wheel sensors, and 1 electric solenoid. Other problems include loose ground connections, loose terminal wires, plug wires that pull apart, wheels that spin, antilock warning lights that come on, and problems with low voltage. (Sitler M.T. 262-263).

Roadway Express has 300 terminals in 33 states and operates 2,395 tractors and 7,697 trailers. Because the many petitions filed with NHTSA indicated they could anticipate higher purchase prices, increased maintainance costs, component shortages and inadequate testing of SS-121 vehicles and components, they initiated an accelerated equipment replacement program in 1973 and 1974 and thus do not have a fully equipped SS-121 vehicle. They have field tested three of the leading antilock brands, Eaton, Wagner and Kelsey-Hayes, and have had repeated problems with all of them. The best, the Eaton system, has an average failure rate of 53,300 miles, which is not comparable to failure rates experienced on other truck components. (See Roadway Express statement, p. 4, which indicates that the least reliable of other truck components is the alternator, which fails on an average of every 260,000 miles). They've experienced antilock failures when the warning light came on, but also failures when the only indication came on brake application, when it was too late. Based on the failure rate they have experienced, if their entire system was equipped with SS-121 vehicles, they could expect 46 failures per day. After ten months, antilock suppliers still are revising and redesigning failsafe modules. (Dawson M.T. 265-270).

F.S. Services, Inc. is a regional farm cooperative with headquarters in Illinois. Its transportation division operates 182 road tractors and 432 trailers. In April, 1975, they put 34 trailers with SS-121 brakes into operation. Shortly thereafter 18 of them were recalled by the manufacturer because of disablement of the system. One trailer was received with sensor rings improperly installed. To update the fleet in the next five years with these brakes will cost approximately $472,000.00. (Davis M.T. 450-452).

Wesco Truck and Trailer Sales performed tests on May 2 and 15, 1975, with representatives of the California Highway Patrol present. During panic stops there were several failures of the modulater valve and computer. Trailers without the antiskid systems stopped just as straight within shorter stopping distances fully loaded on a dry surface. Intermix of 121 and non-121 trailers resulted in jackknife. They started their program to comply with 121 using B. F. Goodrich components and have experienced the following failure rates and problems: 30% of computers and 10% of modulator valves failed prior to delivery; 100% replacement of all ratio relay valves; 100% replacement of sensor drives; 100% of the hubcaps will not hold oil, a problem as to which there has been no solution; 20% of hose assemblies fail on installation; 10% of the wire connectors have failed; 60% of the fuse boxes fail,

finally necessitating 100% replacement. Buyer resistance to the new trailers will cost them an estimated volume loss this year of $600,000.00. For the first nine months of 1974, they manufactured 233 trailers. For the similar period this year, they have manufactured 77. (Sambucetti M.T. 517-519).

Wayne Daniel Truck, Inc. of Mount Vernon, Missouri, has 6 trailers with SS-121 brake systems, five with B. F. Goodrich, and one with Berg. Of the first five, only one had an operating brake system when it was delivered to their truck terminal, only 250 miles away from the factory. By the time this one traveled another 250 miles, its electronic control system failed. It had two malfunctions that dumped all the air and permitted the spring brakes to lockup all wheels, which resulted in a sudden panic stop on the highway. Mr. Wesley Daniel presented the NHTSA Administrator, Dr. Gregory, with a fuse box which had been in operation only during the summer months, and already showed signs of corrosion on the clips and on the wire connectors. (Daniel M.T. 275-279).

Freightliner, a manufacturer, to date has only 460 trucks with warranty registration. Forty-three have experienced electrical problems, a failure rate of 9.4%. The average in-service time between failures is 1.6 months and the average mileage is 13,183 miles. They monitored 131 trucks at two factories during the manufacturing process for the period September 23 through October 8, for SS-121 problems. Only 81 went through assembly without some sort of problem. Defective components on the remaining 50 included 4 computers, 2 modulating valves, 1 computer-valve assembly, and 1 warning module. All had been checked out upon leaving the supplier so the failures had occurred in the interim period. Other problems included 16 cab wiring, 7 chasses wiring, 10 wheel-speed sensors, and 12 connectors. Dynamometer testing after manufacture showed that 18% of the vehicles required antilock adjustment or correction. (Murphy M.T. 293-296).

(A number of statements were presented at the meeting but not read. They are all referred to at M.T. 281. It is assumed that they will be listed in the certified list to be filed with this court December 15, 1975.)

Statement of Gordons Transports, Inc. In 1973 at the request of General Motors, they installed 5 Wagner and 5 General Motors AC systems on 10 new 3-axle tractors. Since then they have experienced continuous repair and upgrading by the manufacturer. The

final upgrading on the systems was done in January 1975, which was the same setup as presently installed. Immediately following the installation, they had trouble with the electrical cord and the connectors at the "black box." They are still experiencing these malfunctions.

Statement of Associated Trucklines. They purchased 15 tractors in 1975, 5 of them single-axle cab-over tractors. Three of these five have experienced brake failure due to the SS-121 air brake system. They've experienced failure in the warning relay so that the driver has no warning in the event of a brake failure.

Statement of Berlington Industries. On October 17, 1975 they conducted stopping tests on a new 3-axle tractor with full SS-121 brakes, with only 22 miles on the odometer. All tests were panic stops on a wet blacktop surface with full brake application, with the air pressure at 110 psi at the beginning of each test. Four stops were made from a speed of 30 miles per hour and in each there was an air pressure reduction from 110 psi to 70 psi. The next series of 4 stops from 45 miles per hour resulted in air pressure reduction from 110 psi to 60 psi. Each of these 45 mph stops resulted in air reduction to a point that the low air warning light and buzzer activated. The air loss is such that there is a danger that the brakes will go into emergency mode before a stop can be achieved, which will effect controllability.

SUMMARY OF DOCUMENTS AND TESTIMONY
RADIO FREQUENCY INTERFERENCE

International Harvester has had a safety defect recall campaign to warn all owners and operators of its trucks that radio transmissions within a certain range while braking can cause malfunction of the antilock which defect "can cause vehicle crash without prior warning." (B.A.24.) To date the only fix to this problem is to affix a warning label on the dashboard of the vehicle. In Omaha, Nebraska, an airport bus has been loosing its brakes as planes come in for a landing. Radio frequency interference (R.F.I.) is the suspected cause. (Schnell M.T. 138.) Antilock manufacturer Rockwell admits that R.F.I. problem exists which has the potential for reduction in brake retardation force, but its investigation is not yet complete. (Flannery M.T. 146-150.) Kelsey-Hayes, whose antilock computer is installed in the International Harvester vehicles, admits that this problem has caused a number of skid control malfunctions, including brake release up to a total of five seconds. (McCuen M.T. 391-392.) General Motors has experienced this problem in field tests and has received eleven reports of such failures. It alerted NHTSA to this problem in early 1974. General Motors has concluded there must be a thorough and exhaustive testing program. (Martin M.T. 361-363.) The Chicago Transit Authority has been having problems while crossing the bridges in Chicago. In the middle of the bridge, for no apparent reason, buses would have no braking. (Schnell M.T. 112-113.) R.F.I. has now been established as the cause. B.A. 36 is an October 28, 1975 report from the Chicago Transit Authority to NHTSA concerning extensive tests carried out by the Authority, General Motors, and Rockwell, which proved that at certain speeds on certain lanes of travel on one of the bridges loss of braking ability occurred due to R.F.I.

APPENDIX G
SUMMARY OF NHTSA'S RELIABILITY FILE

NHTSA RELIABILITY FILE ON FMVSS-121

(27 of the slots in this accordion folder have loosely filed documents. The first slot contains a typed summary sheet for the first twelve slots which assigns a "log" number to all documents in each slot. All documents identified and summarized below are addressed to NHTSA, unless otherwise indicated.)

Log Number	Description
1	Summary Sheet.
2	Documents pertaining to Kelsey Hayes antilock system - loose electrical connection in the computer module (banana pins). Letters from Mack Trucks, International Harvester, and Freightliner. On 1-31-75 Kelsey Hayes reported it had sold 350 of these computer modules and an unknown number had the defect. The result of the defect is that the skid control system would become inoperative without warning or there would be intermittent cycling of the antilock air-control valve (the air would be shut off for up to two seconds).
3	Documents pertaining to defective terminals in the Kelsey Hayes skid control brake wiring harness. A 3-19-75 Fruehauf letter reported the result was intermittent or inoperative antilock without any warning to the driver. On 4-28-75 Kelsey Hayes reported it had shipped 2,577 systems with this potentially dangerous harness.
4	Documents pertaining to 5-5-75 defect notification report concerning Rockwell's antilock system. It had an incorrect backup fuse which might cause the antilock to fail without warning to the driver. It is listed as moderate to small accident potential. It affected about 10% of the computers shipped. Lufkin's letter of

BA31

Log Number	Description
	6-5-75 estimated 55% of 106 of its vehicles were affected. R.O. Products' letter of 6-3-75 reported 26% of its vehicles were affected.
5	Problems in B.F. Goodrich's antilock system. Problem was the rate of potting compound shrinkage which affected the sensor. Loss of antilock might occur without warning. It had a small to moderate accident potential.
6	Documents concerning radio frequency interference (RFI) with antilock. The problems range from illumination of the antilock failure warning light to momentary loss of braking. It is listed as a moderate to significant safety problem. An International Harvester report of 6-11-75 said that RFI causes various malfunctions at the antilock computer. It "can cause vehicle crash if radio transmission is made during brake application."
7	Report of an accident on 4-8-75 of a Silver Eagle Company truck in Des Moines, Washington. Driver reported that its computer brakes did not function properly and the rig overturned.
8	Problems of failures in the ratio relay valve in the B. F. Goodrich antilock system. As the failure occurs the spring brakes (parking brakes) will apply and remain applied until a defective seal is replaced. Reports problems by Utility Trailer Company, Realco Servicing, and by J&L Tanks, Inc.
9	(All documents in this slot were the same as in slot number 4.)
10	Documents reporting problems with the Rockwell antilock system. Summary states, "Incorrect sensor to rotor gap that can lead to a false signal transmission." A 7-10-75 report by

Log Number	Description
	Rockwell indicates lengthened stopping distance and results in a sudden brake application at the end of a stop. The overall effect is an "increase in the potential for a vehicle crash...resulting from a sudden lurch at the end of the stop." A Flexible Company 9-30-75 report states that, "Field experience has indicated that the system is unreliable and in some cases can give a false wheel speed signal indicative of a wheel lockup." Flexible advises disabling the entire units until corrected.
11	Documents pertaining to a problem in the B. F. Goodrich system. Summary describes it as interference between the sensor drive plate and the hub caps, causing a possible loss of brake pressure. A Goodrich 7-11-75 report states that a "loss of brake pressure" could be experienced above a speed of 30 m.p.h. resulting in the loss of braking capacity and vehicle control."
12	A 6-13-75 letter from Smith Transfer Corporation. Two years ago they installed SS-121 equipment on 25 units for test purposes. "Our experience has been completely unsatisfactory, and at times as many as 75% of the units were not operating."
13	Contains two letters describing antilock problems. The first is a Wesco Truck & Trailer Sales Co. 7-25-75 letter reporting that every B. F. Goodrich component used "has failed or been defective." The following items were given failure rates ranging from 10% to 100%. These are computers, modulator valves, sensor drives, hub caps, hoses, wire connectors, and fuse boxes. The second letter is from Great Dane Trailers dated 8-22-75, reporting that of 601 vehicles equipped with B. F. Goodrich components, they

Log Number	Description
	estimate 100% had defects. These included problems in the controller, the Sealco ratio relay valve, and in the sensor drive.
14	A 5-27-75 letter from Central Railroad Company of New Jersey requesting suspension of SS-121 because of field problems experienced.
15	A 9-3-75 telegram from Motor Coach Industries, Inc. reporting an accident in Canada involving a taxi-cab and an SS-121 equipped bus. "Loss of rear brakes due to anti-skid malfunction is the alleged cause." This telegram was followed up by a 9-9-75 letter stating a woman and child were injured in the accident and that the defect can be avoided only by disconnecting the anti-skid device entirely. The system was manufactured by Rockwell.
16	Two letters reporting the experiences of Don Tripp Trucking Co. in Montana. The 8-27-75 letter reports the B. F. Goodrich equipment "is the most unfit piece of equipment I have ever purchased in my thirty years of trucking." The second letter is by a Don Tripp driver, dated 8-16-75, stating that he has 28 years of driving experience, has driven over 3 million miles, and has never experienced the type of problems he is experiencing now.
17	Contains seven newspaper or magazine articles concerning problems in the new braking system. A 9-4-75 Detroit news article is entitled, "Citizen Band Radio Works Truck Brakes." A 9-6-75 Chicago news article is entitled, "Quick Stop Trucks: A Hazard to Safety."
18	Consists of five documents. The first is a 9-18-75 report of a school bus brake failure caused by radio transmission, from the New York Statement Department of Transportation. The second is an 8-27-75 NHTSA report on the problems experienced by Don Tripp Trucking. Three weeks ago a truck had complete air pressure loss. Two weeks after repair, brakes

Log Number	Description
	locked while the vehicle was stopped. The third document is an 8-18-75 report from the Southern California Rapid Transit District that it was impossible to maintain proper sensor clearance on the Rockwell antilock in 100 busses. The fourth is a 7-2-75 report from the Illinois Central Gulf Railroad regarding field test problems experienced in computer modules, electrical wirings and connectors, and modulating valves. The fifth is a 10-2-75 letter from Wayne Daniels Truck, Inc. reporting they have six SS-121 type trailers out of 30 and have had two major malfunctions already.
19	(This slot was empty.)
20	Consists of an 8-19-75 memo. from William DeLapp, Spokane office of the Department of Transportation, to the Director of the Portland office concerning the Don Tripp Truck Co. problems. The trailer antilock malfunction caused brake lock and jackknife. Also reports that information from various sources indicates that citizen band radio transmission and electronic ignition systems on 1975 automobiles can adversely affect SS-121 brakes.
21	9-5-75 letter from Don Bennet (trucker for Northwest Agricultural Cooperative Association, Ontario, Oregon). The Association has 11 SS-121 trucks. They have had to install two new computers within one week. Malfunctions cause wheel lockups. He has driven 20 years without an accident, but in the past three weeks driving SS-121 trucks he has had two close calls due to brake grabbing.
22	10-3-75 NHTSA interoffice memorandums addressed to Steve Sachs; that Holly Farms has reported only 23 out of its 67 121 trailers are operable.

Log Number	Description
23	10-8-75 telegram from Consolidated Freightways. 256 trailers with Rockwell antilock systems were put in service April through July, 1975. A random spot-check last week with 60 trailers revealed the antilock was inoperative.
24	Article in the September, 1975 issue of Southern Motor Cargo magazine entitled, "Panel Presentations, Round Table Discussions Highlight RCCC-Maintenance Committee Meeting" on August 4 in Grand Rapids, Michigan. Edgecomb Steel reported at least one accident due to SS-121 system malfunction. United Parcel Service reported a "multiplicity of problems" and indicated that "factory trained engineers had real problems locating system malfunctions." The article refers to a Bureau of Motor Carrier Safety study based on more than 800 accident investigations and "only seven were related to brake failure and none of these were attributed to brake design." The article also reports that LaVerne Morgan of the United States Postal Service "revealed that his maintenance shop had been instructed to disconnect the system fromall trailers because of operational problems."
25	10-10-75 telegram from Chicago Transit Authority. "CTA has experienced instances of involuntary brake release on new busses received from GM equipped with antilock skid brake system." Because of "imminent danger to the public, CTA is deactivating the antiskid system pending investigation."
26	10-10-75 NHTSA status report on testing of Mason-Dixon Company three axle tractor. Mr. Duggoff of NHTSA was contacted by the Union in June, 1975 about driver concern. He observed that vehicles had a tendency to pull during hard braking. NHTSA leased the truck and trailer and tests showed that it did pull to the left. Tentative conclusion was front brake imbalance.

Log Number	Description
27	(Copy of the 10-8-75 telegram from Consolidated Freightways which is in Log 23.)

APPENDIX H
CALIFORNIA HIGHWAY PATROL PRESENTATION

75-16-N02-042-p-8

"PRESENTATION TO NHTSA PUBLIC MEETING ON FIELD EXPERIENCE WITH TRUCKS, BUSES AND TRAILERS MANUFACTURED IN CONFORMITY WITH FMVSS 121 AIR BRAKE SYSTEMS"

PRESENTED BY CAPTAIN E. E. KYNASTON
OCTOBER 31, 1975

I AM CAPTAIN E. E. KYNASTON, COMMANDER OF THE CALIFORNIA HIGHWAY PATROL'S COMMERCIAL VEHICLE SECTION, SACRAMENTO. ON BEHALF OF COMMISSIONER G. B. CRAIG, I WISH TO EXPRESS THE DEPARTMENT'S APPRECIATION FOR THE OPPORTUNITY TO ADDRESS THE ISSUES IN THIS VERY IMPORTANT MEETING.

BEFORE I RESPOND TO THE SUBJECT OF THIS MEETING, MAY I GIVE RELEVANCE TO MY COMMENTS BY SOME BACKGROUND INFORMATION CONCERNING THE SCOPE OF MY DEPARTMENT'S COMMERCIAL VEHICLE/MOTOR CARRIER OPERATIONS. APPROXIMATELY 2,500,000 TRUCKS AND BUSES, OR 10 PERCENT OF THE NATION'S TOTAL COMMERCIAL VEHICLES, ARE OPERATED ON CALIFORNIA HIGHWAYS. THE CALIFORNIA HIGHWAY PATROL EXERCISES ENFORCEMENT AND REGULATORY RESPONSIBILITY OVER THESE COMMERCIAL VEHICLES ON EVERY FREEWAY AND UNINCORPORATED ROADWAY WITHIN THE STATE OF CALIFORNIA. TO CARRY OUT THIS RESPONSIBILITY, WE HAVE APPROXIMATELY 376 UNIFORMED AND NONUNIFORMED PERSONNEL, 9 INSPECTION FACILITIES AND

BA48

45 PLATFORM SCALES ASSIGNED EXCLUSIVELY TO COMMERCIAL VEHICLE ON AND OFF-HIGHWAY INSPECTION, REGULATION AND ENFORCEMENT. THE EFFORTS OF OUR PERSONNEL RESULT IN THE INSPECTION OF 275,000 VEHICLES ANNUALLY. IN ADDITION, 4,500 NONCOMMERCIAL PATROL OFFICERS ARE USED FOR SOME ADDITIONAL COMMERCIAL ENFORCEMENT ACTIVITIES AS WELL AS THE INVESTIGATION OF APPROXIMATELY 14,000 COMMERCIAL VEHICLE ACCIDENTS YEARLY. INCLUDED WITHIN OUR RESPONSIBILITIES IS THE ADOPTION OF ADMINISTRATIVE REGULATIONS ON AIR BRAKE EQUIPMENT ON THE STATE LEVEL COMPARABLE TO REQUIREMENTS ADOPTED BY NHTSA AT THE NATIONAL LEVEL. CALIFORNIA HIGHWAY PATROL REGULATIONS AND CALIFORNIA VEHICLE CODE LAW ON AIR BRAKE SYSTEMS ARE REPRESENTATIVE OF APPROXIMATELY 50 YEARS OF SAFETY EXPERIENCE IN CALIFORNIA. FOR THE MOST PART, OUR AIR BRAKE REGULATIONS AND LAW HAVE BEEN PREEMPTED FOR 1975 AND LATER VEHICLES BY FMVSS 121.

THESE RESPONSIBILITIES AND ACTIVITIES PROVIDE A BROAD BACKGROUND AND BASE OF INFORMATION WHICH ALLOWS US TO OBJECTIVELY EVALUATE THE EFFECT FMVSS 121 IS HAVING ON FIELD EXPERIENCE OF VEHICLES EQUIPPED WITH 121 SYSTEMS.

CONCERNING THAT EXPERIENCE, LIKE NHTSA, MY DEPARTMENT TOO HAS RECEIVED A LARGE VOLUME OF INFORMATION CONCERNING ALLEGED ACCIDENTS AND INCIDENTS SUPPOSEDLY RESULTING

FROM FMVSS 121. BECAUSE OF THIS, I THOUGHT IT WOULD BE EASY TO OBTAIN ACCIDENT DATA. THAT DID NOT PROVE TO BE THE CASE. OFFICIAL REPORTS OF ACTUAL ACCIDENTS ARE VERY FEW. POSSIBLY THIS IS BECAUSE OUR ACCIDENT REPORTING SYSTEM WAS NOT DESIGNED TO REQUIRE SPECIALIZED EVALUATION AND REPORTING OF ACCIDENTS INVOLVING 1975 FMVSS 121 VEHICLES. ALSO, THE ACTUAL VOLUME OF 121-EQUIPPED VEHICLES OPERATING ON CALIFORNIA HIGHWAYS, PARTICULARLY TRUCKS AND TRAILERS, MAY BE QUITE LOW. REPORTS FROM MANUFACTURING AND TRUCKING INTERESTS INDICATE SALES OF 1975 121 VEHICLES ARE 40 TO 50 PERCENT BELOW 1974. HOWEVER, SALES OF BUSES ARE UP APPROXIMATELY 37 PERCENT. INDUSTRY REPORTS BECAUSE OF HIGH COST, DECREASED LOAD WEIGHT CAPACITY AND OPERATIONAL EXPERIENCE WITH 121 SYSTEMS, TRUCKING OPERATORS ARE NOT PURCHASING NEW VEHICLES IF THEY CAN AVOID DOING SO. ONE TRAILER MANUFACTURER, TITAN TRAILER OF WOODLAND, CALIFORNIA, ADVISES THEIR SALES OF 1975 121-EQUIPPED VEHICLES ARE DOWN 43 PERCENT WHILE THEIR SALES OF USED VEHICLES, INCLUDING THOSE THAT HAVE BEEN WRECKED AND REBUILT, ARE EXTREMELY HIGH. THAT EXPERIENCE APPEARS REPRESENTATIVE OF COMMERCIAL SALES IN CALIFORNIA. I BELIEVE BUS SALES WOULD ALSO BE DOWN IF IT WERE NOT FOR THE ACCUTE SHORTAGE OF BUSES BROUGHT ABOUT BY THE NATIONAL FUEL CRISIS AND THE

INCREASE OF TRANSIT BUS USE BY CONVERSION OF COMMUTERS FROM AUTOMOBILES TO BUSES. THE BUS OPERATORS HAVE BEEN FORCED TO BUY NEW VEHICLES EQUIPPED WITH 121 SYSTEMS AS NO OTHER VEHICLES ARE AVAILABLE IN A RAPIDLY-EXPANDING INDUSTRY. THIS IS PROBABLY WHY THE MAJORITY OF THE INFORMATION I BRING TO YOU TODAY RESULTS FROM THE PASSENGER TRANSPORTATION INDUSTRY.

NOW LET ME SUMMARIZE WHAT MY DEPARTMENT HAS OBSERVED IN CALIFORNIA. THIS INFORMATION WAS PROVIDED BY OUR FIELD PERSONNEL AND FROM INDIVIDUAL COMPANYS OPERATING 121 VEHICLES. UPON CONCLUSION OF MY TALK, I WILL PRESENT YOU A REFERENCE BOOKLET OF MATERIAL GIVING IDENTIFICATION AND APPROXIMATE DATES OF THE INCIDENTS WHICH I AM ABOUT TO RELATE. BECAUSE OF TIME CONSTRAINTS, I WILL SUMMARIZE ONLY A PART OF THE INFORMATION IN THREE CATAGORIES: ACCIDENTS, EQUIPMENT MALFUNCTION INCIDENTS AND 121 DEMONSTRATIONS WITNESSED. I ONLY HAVE INFORMATION ON 24 ACCIDENTS, THEY ARE:

1. SAN DIEGO TRANSIT COMPANY
   IN LESS THAN TWO MONTHS (AUGUST-SEPTEMBER)
   A. 4 ACCIDENTS.
      1 COLLISION WITH A TRUCK - NO INJURIES
      3 INSTANCES OF BRAKES LOCKING - MINOR INJURIES TO PASSENGERS

   B. 32 INCIDENTS REPORTED.
      11 FUSES BLOWN
      21 REPORTS OF MALFUNCTIONING BRAKES

2. AMERICAN PUBLIC TRANSIT AUTHORITY SURVEY
   24 OPERATORS SURVEYED OPERATING 1,492 BUSES,
   5 DIFFERENT MANUFACTURERS
   A. 17 ACCIDENTS - 28 PASSENGERS INJURED.
      60 MALFUNCTIONS
      BRAKES GRABBING AND LOCKING - FAIL TO STOP VEHICLE (LOSS OF BRAKES AT LOW SPEED)
      INCREASES STOPPING DISTANCE
      BRAKES ARE ERRATIC, UNRELIABLE
      BRAKES DRAG
      DIFFICULT STEERING DURING BRAKING

3. OILFIELD TRUCKING - BAKERSFIELD
   B. F. GOODRICH ANTISKID SYSTEM
   1975 KENWORTH TRUCK AND FRUEHAUF TRAILER
   ANTISKID INSTALLED IN FEBRUARY 1974 (PRIOR TO 121)
   A. MAY 30, 1975, DRIVER WAS INVOLVED IN ACCIDENT. HE REPORTED A TOTAL LOSS OF SERVICE BRAKE (NO REACTION FROM FOOT PEDAL).
   B. SUBSEQUENTLY NO REASON FOR FAILURE COULD BE FOUND.

4. FAIRBANKS TRUCKING - MODESTO

A. 1 VEHICLE JACKKNIFED OFF THE ROAD - NO PROPERTY DAMAGE.

B. NEW TRACTOR EQUIPPED WITH 121 - TRAILER NOT EQUIPPED:

CREATES PULLING TO LEFT OR RIGHT DURING STOPPING

5 TRACTORS - NUMEROUS MALFUNCTIONS IN WIRING AND COMPUTERS

FRONT SPRINGS ARE BLOCKED TO IMPROVE STEERING STABILITY WHEN STOPPING

5. PASADENA SCHOOL DISTRICT

SCHOOL BUS

A. 1 ACCIDENT

VEHICLE DECELERATED FROM 25 MPH TO 4.5 MPH, SOLENOID VALVE DUMPED AIR THEN BRAKES LOCKED.

B. PUPIL WAS INJURED STRIKING SEAT IN FRONT.

6. ORANGE COUNTY BUS SYSTEM

REPORTS A BRAKE FAILURE IN THE COMPANY YARD. BUS WENT THROUGH A FENCE. NO INJURIES.

THERE HAVE BEEN EXTENSIVE OPERATIONAL INCIDENTS, SUCH AS:

1. SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT (SCRTD)

A. MALFUNCTIONS REPORTED WITHOUT ACCIDENTS.

511 - TOTAL NUMBER OF FAILURES

170 - IN-SERVICE FAILURES

81 - OPERATORS COMPLAINED OF BRAKE PROBLEMS IN-SERVICE

B. COMPLAINTS.

BRAKES DUMPING AIR

BRAKE LOSS

BRAKES FADING

VEHICLE WILL NOT STOP

BRAKES DRAGGING AND BRAKES LOCKING

BRAKES GRAB AND WILL NOT RELEASE

C. TYPE OF REPAIRS PERFORMED.

151 - SENSORS CHANGED OR ADJUSTED

40 - COMPUTERS CHANGED

185 - FUSES CHANGED

135 - FAULTY CONNECTIONS AND MISCELLANEOUS FAILURES

2. ASLAN TRUCKING - HOLLISTER

30 - 1975 UTILITY TRAILERS

A. 59 RADIAL TIRES DESTROYED.
BRAKE LINING LIFE OF 8,000 MILES DUE TO FAILURES IN BRAKING SYSTEMS WITH 121 ARE HOOKED IN COMBINATION WITH PRE 121.

3. SACRAMENTO REGIONAL TRANSIT
103 FLEXIBLE BUSES
A. 15 COMPUTER FAILURES.
B. CONTINUOUS BLOWING FUSES.
C. 2 SENSOR FAILURES.
EXCITOR RINGS - IMPROPER CLEARANCE

4. SAFEWAY STORES
UTILITY TRAILERS
A. 43 FAILURES.
TRAILER AIR SUPPLY CONTROL (TASK VALVE FAILURE)

5. SAN FRANCISCO MUNICIPAL RAILWAY
AMERICAN MOTOR GENERAL
A. 4 BUSES.
BRAKE LINING LIFE 8,000 MILES
ANTISKID DEVICE FREQUENTLY INOPERABLE
BRAKES SEVERE WHEN ANTISKID NOT WORKING

6. NORWALK - LA MIRADA UNIFIED SCHOOL DISTRICT
CROWN COACH SCHOOL BUS
A. REPORTS REGULAR FUSE FAILURES - COMPUTER CHANGED WITH NO EFFECT.

MY DEPARTMENT HAS HAD THE OPPORTUNITY TO WITNESS TWO 121-EQUIPPED VEHICLE DEMONSTRATIONS ON THE FOLLOWING:

1. INTERNATIONAL HARVESTER - FORT WAYNE, INDIANA
SERGEANT L. ZIESE WITNESSED TESTS ON 121 AIR BRAKE SYSTEMS THAT CONFIRMS INDUSTRIES FINDINGS.
A. 3 TESTS OF TRUCK AND BUS CHASSIS.
1 - ANTILOCK SYSTEM FAILED
TIRES LOCK, FLAT SPOTS ON TIRES
WARNING LAMPS DID NOT INDICATE ELECTRICAL FAILURE
B. DURING HIGH SPEED (50 MPH) TEST ANTILOCK FUNCTIONED.
EXTREME BOUNCING AND JERKING
C. HIGH SPEED (50 MPH) STOP WITH SCHOOL BUS.
EXPELLED SO MUCH AIR LOW AIR WARNING LAMP AND BUZZER BEGAN TO OPERATE

2. WESCO TRUCK AND TRAILER SALES - WOODLAND
COMMERCIAL VEHICLE SECTION WITNESSED SEVERAL STOPPING DISTANCE TESTS OF VEHICLES WITH AND WITHOUT 121 SYSTEMS, LOADED AND EMPTY.
A. INSTANCES OF 121 SYSTEM.

GREATER STOPPING DISTANCE THAN UNEQUIPPED VEHICLES

FUSES FAILED

COMPUTER FAILED

1 INSTANCE BRAKES DID NOT WORK ON ONE AXLE (COMPUTER FAILURE)

YOU WILL NOTICE THE SIGNIFICANCE OF THIS DATA IS IT TENDS TO SUPPORT THE STATEMENT MADE IN THE FEDERAL REGISTER ANNOUNCEMENT FOR THIS MEETING THAT NHTSA BELIEVES THE "PROBLEMS DISCOVERED TO DATE RESULT FROM SPECIFIC DESIGN AND QUALITY CONTROL DEFICIENCIES AND ARE SUSCEPTIBLE TO ENGINEERING SOLUTIONS."

IF THIS IS TRUE, WHY DID THIS MASS OF MANUFACTURING DEFICIENCIES OCCUR? WE ARE NOT TALKING ABOUT INFREQUENT PROBLEMS ON A FEW MAKES OF VEHICLES, BUT EXTENSIVE DOCUMENTED OPERATIONAL DEFICIENCIES THAT HAVE OCCURRED ACROSS THE SPECTRUM OF VEHICLES PLACED INTO SERVICE UNDER 121 REQUIREMENTS. IN EVALUATING THIS INFORMATION, WE MUST ALSO ASK THE QUESTION, WHY DID THE FINEST ENGINEERS IN THE WORLD, USEING THE MOST MODERN MANUFACTURING PROCESSES, PRODUCE THOUSANDS OF VEHICLES WITH MECHANICALLY-DEFICIENT AIR BRAKE SYSTEMS IN COMPLIANCE WITH FMVSS 121? IS IT THAT WE DO NOT HAVE ADEQUATE AIR BRAKE EXPERTISE IN OUR TRUCK MANUFACTURING INDUSTRY, OR IS IT BECAUSE THE REQUIREMENTS AND PARTICULARLY THE TIME FRAMES MANDATED UPON THAT

INDUSTRY WERE UNREALISTIC AND INTERFERRED WITH THE NORMAL PROCESS OF DEVELOPMENT AND TESTING OF NEW EQUIPMENT? WE BELIEVE THAT TO BE THE CASE. WE BELIEVE THE TIME CONSTRAINTS PLACED UPON THE MANUFACTURING INDUSTRY TO IMPLEMENT THE REQUIREMENTS MANDATED BY NHTSA WERE UNREALISTIC AND EXCEEDED THE DEVELOPMENTAL ABILITIES OF THE INDUSTRY TO COMPLY WITH THOSE REQUIREMENTS. THIS PROBLEM OF TIMING WAS AN ISSUE BROUGHT TO THE ATTENTION OF NHTSA WHEN IN DECEMBER OF 1974 THE FEDERAL REGISTER ASKED FOR COMMENTS CONCERNING DELAY OF IMPLEMENTATION OF THE STANDARD. I HAVE BEEN ADVISED THE MAJORITY OF RESPONSES FROM THE MANUFACTURING INDUSTRY AND OTHERS, INCLUDING MY DEPARTMENT, RECOMMENDED AGAINST IMPLEMENTATION AT THAT TIME. HOWEVER, NHTSA CHOSE TO DISREGARD THAT ADVICE AND MAINTAINED THE JANUARY 1 AND MARCH 1, 1975 IMPLEMENTATION. IT IS INTERESTING TO NOTE ONE MAJOR MANUFACTURER CITED IN THE FEDERAL REGISTER ON BOTH DECEMBER 12, 1974 AND JANUARY 7, 1975, AS DESIRING TO PROCEED WITH THE IMPLEMENTATION, HAD TO RETROFIT THOUSANDS OF VEHICLES DUE TO AIR BRAKE MALFUNCTIONS.

I REALIZE THE IMPACT OF MY PRESENTATION TODAY MAY BE LESSENED BECAUSE OF THE FEW NUMBER OF ACCIDENTS I HAVE RELATED TO YOU. HOWEVER, I EARNESTLY HOPE THE NUMEROUS INCIDENTS OF EQUIPMENT DEFICIENCIES I HAVE RECOUNTED WILL

NOT BE TAKEN LIGHTLY. UNFORTUNATELY, WE BELIEVE THESE INCIDENTS OF DEFICIENCIES IN NEW 121 VEHICLES TO BE THE FORERUNNER OF MANY MAJOR ACCIDENTS AS THE VEHICLES BECOME MORE DANGEROUS THROUGH THOUSANDS OF MILES OF USAGE. THIS IS PARTICULARLY A CONCERN OF MY DEPARTMENT. OUR OPERATIONAL EXPERIENCE IN MANY YEARS OF EVALUATING COMMERCIAL VEHICLE ACCIDENTS AND MAINTENANCE PROGRAMS INDICATES OUR MOST SIGNIFICANT PROBLEM HAS NOT BEEN ERRATIC STOPPING AND JACKKNIFING CAUSED BY THE BASIC AIR BRAKE SYSTEM, RATHER, IT HAS BEEN ACCIDENTS CAUSED BY MAINTENANCE DEFICIENCIES SUCH AS IMPROPERLY ADJUSTED BRAKES. THERE IS LITTLE DOUBT THIS PROBLEM OF MAINTENANCE WILL BE COMPOUNDED BY THE HIGHLY COMPLEX FMVSS 121 AIR BRAKE SYSTEMS.

MY PURPOSE IN BEING HERE TODAY IS TO PROVIDE INTERPRETATIVE TESTIMONY THAT THERE ARE PROBLEMS RESULTING FROM THE FMVSS 121 STANDARD. IT IS THE OPINION OF MY DEPARTMENT THE PROBLEMS ARE PRINCIPALLY CAUSED BY NHTSA MANDATING THE STANDARD BEFORE INDUSTRY HAD SUFFICIENT TIME TO PROPERLY DESIGN, TEST AND MANUFACTURE SAFE VEHICLES UTILIZING THE NEW REQUIREMENTS. THIS IS NOT TO SAY THE BASIC THEORIES OF THE STANDARD FOR IMPROVED STOPPING AND PREVENTION OF WHEEL LOCKUP ARE NOT EXCELLENT CONCEPTS FOR PERFORMANCE STANDARDS. I DO NOT BELIEVE THE

SITUATION IS HOPELESS. THE PROBLEM CAN BE RESOLVED, BUT IT WILL TAKE EXTENSIVE WORK ON BEHALF OF MANY PEOPLE. I BELIEVE THE SOLUTION MUST START WITH AT LEAST A TEMPORARY WITHDRAWAL OF FMVSS 121 REQUIREMENTS AND A MODIFICATION OF THE STANDARD BEFORE IT IS REIMPLEMENTED SPECIFYING PERFORMANCE CRITERIA RATHER THAN INDIVIDUAL DESIGN FEATURES. IDEALLY, AS A STATE REGULATORY OFFICIAL, I WOULD PREFER IT BE MODIFIED TO ELIMINATE THE PREEMPTION OF OUR LAWS AND REGULATIONS. TO THAT END, MY DEPARTMENT, ON JULY 17, 1975, PETITIONED NHTSA TO CHANGE THE STANDARD AND PROVIDE EXTENSIVE MODIFICATION IN LINE WITH CURRENT REQUIREMENTS AND MANUFACTURING EXPERTISE IN THE FIELD OF AIR BRAKE SYSTEMS. WE STRONGLY URGE NHTSA TO TAKE PROMPT ACTION ON THIS SERIOUS SITUATION BEFORE THE MASS OF INCIDENTS THAT I HAVE COMMENTED ON ARE REPLACED BY EQUAL NUMBERS OF ACCIDENTS, AND FMVSS 121 BECOMES A MAJOR DETERRENT TO SAFETY ON HIGHWAYS RATHER THAN IMPROVING THAT SAFETY AS I AM SURE IT WAS INTENDED TO DO.